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| --- | --- | --- | --- |
| Balance the half-equation and state what you would observe  MnO4– → Mn2+ | MnO4– + 8H+ + 5e– → Mn2++ 4H2O  Purple solution turns colourless. | Write the oxidation numbers of atoms in **bold**  1. **N**H3  2. **S**O2  3. **Cu**2+  4. **Mn**O4–  5.**Cr**O42– | **1**. –3  **2**. +4  **3**. +2  **4**. +7  **5.** +6 |
| Balance the half-equation and state what you would observe Cu → Cu2+  Is it oxidation or reduction? | Cu → Cu2+ + 2e–  Brown solid disappears and solution slowly turns blue.  oxidation | Cu + 4HNO3 → Cu(NO3)2 + 2NO2 + 2H2O  **A** The oxidising agent is \_\_\_\_\_\_  **B** What atom has lost electrons? | **A.** HNO3  **B**  Cu |
| Balance the half-equation and state what you would observe  I2 → I–  Is it oxidation or reduction? | I2 + 2e– → 2I–  Brown solution turns colourless.  reduction | Cl2 + 2Br– → 2Cl– + Br2  **A.** What is reduced?  **B.** Which element is the reductant? | **A.** chlorine  **B.** Br |
| Balance the half-equation and state what you would observe  Fe2+ → Fe3+  Is it oxidation or reduction? | Fe2+ → Fe3+ + e–  Pale green solution turns pale orange  oxidation | In electrolysis, reduction occurs at the \_\_\_. | cathode |
| Balance the half-equation and state what you would observe  Cr2O72– → Cr3+  Is it oxidation or reduction? | Cr2O72– + 14H+ + 6e– → 2Cr3+ + 7H2O  Bright orange solution turns blue/green.  reduction | In electrolysis, oxidation occurs at the \_\_\_. | Anode (+) |
| Balance the half-equation and state what you would observe  H2O2 → O2  Is it oxidation or reduction? | H2O2 → O2 + 2H+ + 2e–  Colourless solution forms colourless gas.  oxidation | A. In the electrolysis of alumina the anodes are made of \_\_\_.  B. In electrolysis, reduction occurs at the \_\_\_. | A. Carbon/graphite  B. cathode (-) |
| Balance the half-equation and state what you would observe  Cl– → Cl2  Is it oxidation or reduction? | 2Cl– → Cl2 + 2e–  Colourless solution forms green gas.  oxidation | electrolysis  A. Write the ½ equation for the electrode B reaction  B.What would you see atB? | A. Pb2+ + 2e– → Pb  B. grey metal covers the electrode |
| Balance the half-equation and state what you would observe  Br– → Br2  Is it oxidation or reduction? | 2Br– → Br2 + 2e–  Colourless solution turns red/brown.  oxidation | Write the half-equation for the reaction which occurs at electrode A electrolysis | 2Br– → Br2 + 2e– |